DOE Technical Assistance Program

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

The Parker Ranch installation in Hawaii

Designing Effective Renewables Programs

September 28, 2010

Cheryl Jenkins

Vermont Energy Investment Corporation

DOE Technical Assistance Program

Team 4 – Program & Project Development & Implementation

Webinar Overview

- Technical Assistance Project (TAP) Overview
- The Framework for an Effective Program
- Effective Program Design Approaches
- Resources
- Q&A

What is TAP?

DOE's Technical Assistance Program (TAP) supports the Energy Efficiency and Conservation Block Grant Program (EECBG) and the State Energy Program (SEP) by providing state, local, and tribal officials the tools and resources needed to implement successful and sustainable clean energy programs.

How Can TAP Help You?

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TAP offers:

- One-on-one assistance
- Extensive online resource library, including:
  - Webinars
  - Events calendar
  - TAP Blog
  - Best practices and project resources
- Facilitation of peer exchange

On topics including:

- State and local capacity building
- Energy efficiency and renewable energy technologies
- Program design and implementation
- Financing
- Performance contracting

Provider Network Resources

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State and Local Capacity Building	• Trainings • Workshops • Peer-to-peer matching
Technical	• Renewable energy siting and development • Review of technical specs for RFPs • Strategic planning, energy management, and conservation strategies • Green building technologies • Building codes
Program Design and Implementation	• Policy and program development • Coordinating rate-payer funded dollars with ARRA projects and programs • Sustainable community and building design • State and regional EE and RE assessments and planning • EE and RE portfolio program design elements
Financial	Program design support and guidance on financing mechanisms such as: • Revolving loan funds (RLFs) • Property-assessed clean energy (PACE) • Loan loss reserves and enhanced credit mechanisms
Performance Contracting	• Designing and implementing a performance contract • Leveraging private investment • Reducing institutional barriers • Tracking and comparing programs

Who We Are: Team 4

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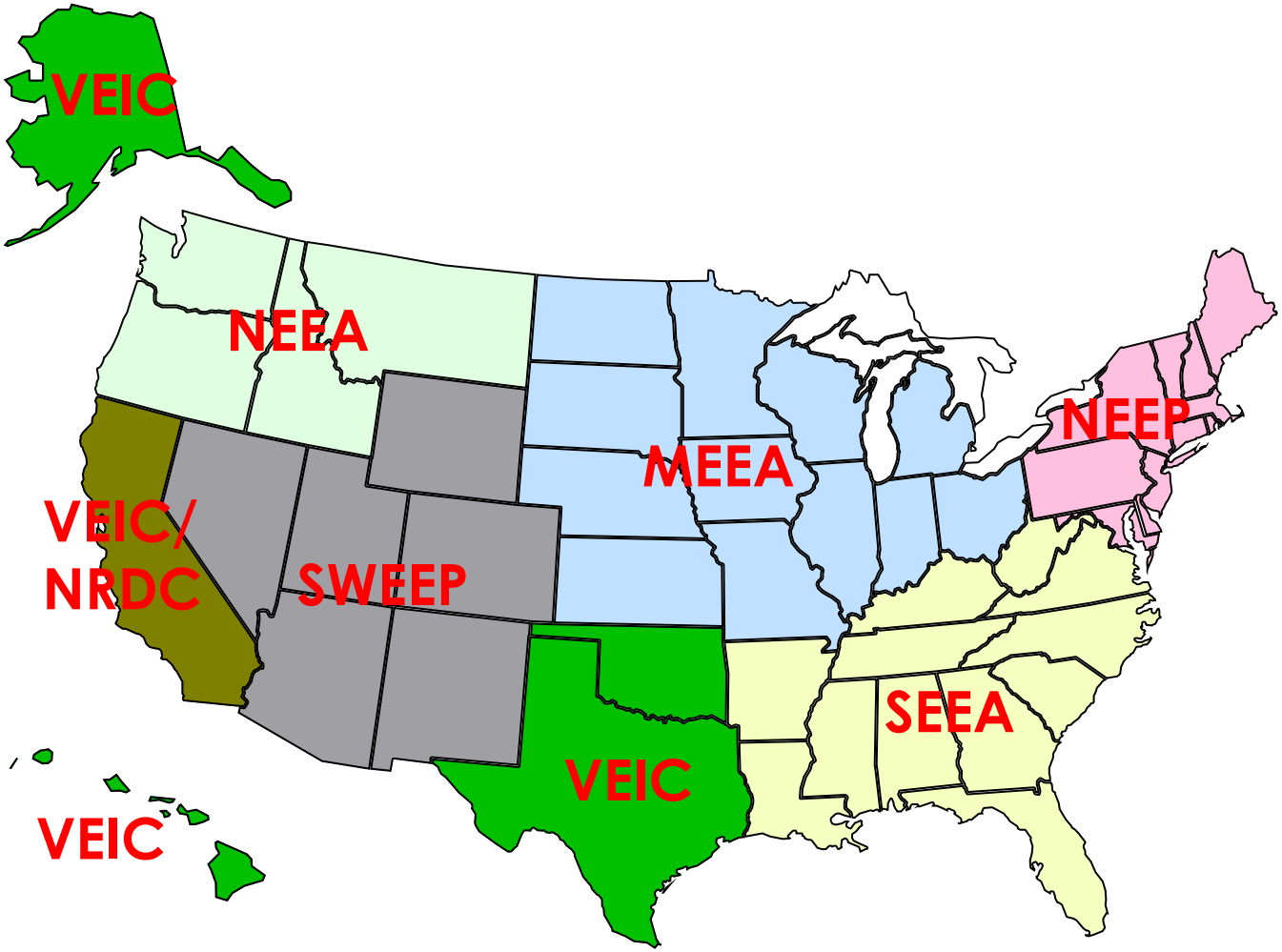

ACEEE, NRDC: National Support

VERMONT ENERGY INVESTMENT CORPORATION

EF GROUP FUTURES ENERGY

MEEA Midwest Energy Efficiency Alliance

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SWEEP

NORTHWEST ENERGY EFFICIENCY ALLIANCE

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NRDC THE EARTH'S BEST DEFENSE

ACEEE American Council for an Energy-Efficient Economy

Introduction

- Scope of this presentation
  - Overview level – more specifics will follow in other webinars and resources
- Designed to answer some basic questions:
  - What are the elements of a successful renewables program?
  - What are the logical steps to take to assure success?
  - Is there a “silver bullet”?
- Consider renewables in a larger context of clean and sustainable energy
  - Movement toward integration between Energy Efficiency and Renewable Energy support

Elements of Program Success

- Supporting foundational ***policies***
- Clear ***objectives***
- An ***organizational culture*** that supports program goals
- A ***program structure*** designed to target barriers
- Substantial and stable ***funding*** to develop markets
- Clear communication with and involvement of ***stakeholders***
- A ***portfolio*** approach to targeted sectors
- Engagement of and support for private sector ***contractors***
- Ability to be ***innovative and flexible***

The Framework for an Effective Program

Key Program Design Elements

- Identify Objectives
- Understand the Local Context
- Define Program Approach
- Design and Develop Programs
- Implement Programs
- Evaluate and Refine

Identify Objectives

- Design your programs to meet your specific goals and needs
- Some common objectives:
  - Promote the development and deployment of renewable technologies (for targeted or all technologies)
  - Serve as many customers as possible, or maximize kWh
  - Realize the economic benefit of in-state technology development and local jobs
  - Lower long-term energy costs to consumers
  - Provide access to renewable energy to all economic classes
  - Diversify energy supply; increase grid reliability and security
  - Take advantage of consumer interest in environmental benefits
- Be pragmatic as well – program should be viable!

Operational Objectives

- Programs should be economically efficient
  - Incentives should be set at the lowest possible effective level
- Strive for sustainability
  - If funding is limited, design appropriately
- Design your program and operations for low program delivery costs
  - Simplicity, consistency, predictability
- Be sure you can track your funding and participation
- Capture data for measureable results

Understand the Local Context

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- Policy Environment
  - Renewable Portfolio Standards; Feed in Tariff; Community-based development legislation; Tax policy; Energy codes and standards
- Utility Infrastructure
  - Interconnection; net-metering
- Market
  - Contractors? How sophisticated?
  - Customer demand
  - Prices
- Local Barriers
  - Economic
  - Education
  - Product availability

Understand the Local Context

- Program Funding: How much, and for how long?
  - Public benefit funds
  - ARRA support
  - Ratepayer programs
- Other types of financial support available to project owners
  - Utility programs
  - Other grants, loan guarantees (ex., Dept. of Agriculture)
  - Tax credits; grants in lieu of tax credits; accelerated depreciation, etc. (Federal and local)
  - FIT; Production tax credits; Renewable Energy Credits
  - Third-party ownership opportunities

Define Program Approach

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- Direct Project Support
  - Financial incentives to subsidize projects
- Market-driven Investments
  - Financing programs
- Industry Development
  - Technology and business development grants

- A portfolio of programs across these categories is often optimal

Example of Program Portfolio

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Financial Incentives – State of California (from DSIRE)

Industry Recruitment/Support
- Sales Tax Exemption for Alternative Energy Manufacturing Equipment

PACE Financing
- Local Option - Municipal Energy Districts

Performance-Based Incentive
- California Feed-In Tariff

Property Tax Incentive
- Property Tax Exclusion for Solar Energy Systems

State Rebate Program
- California - Energy Efficient Appliance Rebate Program
- California Solar Initiative - Multi-Family Affordable Solar Housing (MASH) Program
- California Solar Initiative - PV Incentives
- California Solar Initiative - Single-Family Affordable Solar Housing (SASH) Program
- California Solar Initiative - Solar Water Heating Rebate Program
- CEC - New Solar Homes Partnership
- Emerging Renewables Program
- Self-Generation Incentive Program

Design Program Details

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- Seek expert advice and information
  - DOE Technical Assistance Program
  - Program Design Consultants
  - DOE National Labs
  - DSIRE (Database of State Incentives for Renewables & Efficiency): www.dsireusa.org
  - IREC (Interstate Renewable Energy Council): www.irecusa.org
- Learn from the experiences of others
  - Peer-to-peer opportunities (TAP meetings this fall and winter)
  - Clean Energy States Alliance: www.cleanenergystates.org
- Enlist local stakeholders
  - Renewable energy trade associations
  - Community energy committees
  - Vocational programs

Plan for Program Infrastructure

- In-house or out-sourced administration
- Interactions with contracting community (require certification or official installer registration?)
- Application and reporting forms and tools
- Marketing/ outreach plans
  - Including customer service for programs
- Quality assurance process
  - Technical review of system design
  - System verification or inspection
- IT/ M&V system

Implement Programs

- Be fully ready for business before opening the doors!
  - Unprepared start can cause damage to program and future prospects
  - If necessary, consider a pilot with clear boundaries
- Use program launch to create publicity
- Track funding and participation
  - Track reservations rather than cash paid

Evaluate and Adjust

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- Plan for regular evaluation
  - Program metrics
  - Internal processes
- Report results regularly to funders, stakeholders, public
- Use program objectives to guide adjustments when needed

Effective Program Design Approaches

Common Program Approaches

- Incentive (or Rebate) Programs
  - Lump-sum payments to project owner at end of installation to cover a portion of project cost
- Grant Programs
  - Competitive programs that provide support for larger or less-"standard" projects
- Loan Programs
  - Financing to help cover up front capital costs of project installation
- Not specifically covered today:
  - All of these should be supplemented with consumer education and outreach
  - Could consider some level of contractor training and support
  - Technology and business development grants or investment strategies

Incentive Programs

- Advantages
  - Easy to administer: projects and technologies are “standard” and must meet specific criteria to participate
  - Designed to support large numbers of projects, driving customer demand and market transformation
  - Address the need for up-front capital for projects with long-term return
  - First-come, first-served design allows equitable participation (for customers and technologies)
  - Allow structured and predictably adjustable levels of funding
- Very common type of support:
  - 29 states; 6 local; utilities in 40 states

Incentive Programs

- Challenges
  - Market and customers can come to rely on incentives
  - Insecure or cyclical funding limits market growth
  - May take high levels of support to move new markets
  - Economically inefficient: no “perfect” incentive level or adjustment scheme
  - Cannot assure project performance
  - Can deplete program funding (often amazingly rapidly!)

Design - Funding

- A secure and transparent plan for program funding is crucial
  - Installers make hiring decisions, consumers make purchasing decisions; both need predictability
  - Provide long-term program funding plan whenever possible
- Budget cycles can help control outflow rate
  - Clear, early communication about program budgets allows installer and customers to predict flow
  - Frequent cycles (semi-annually or quarterly) allow for short stop times if budget is oversubscribed

Design - Eligibility

- Clear and specific eligibility criteria: Technologies
  - Standard support for established technologies
  - Targeted support for emerging technologies
  - Separate budgets/programs allows concentrated support
  - First come, first served allows market to determine the mix
- Customers/ projects
  - Residential, C&I, community-scale
  - Special categories with additional support
  - Set total single customer limits
  - Set maximum project size
- Installers
  - Certification for participation in program; insurance and warranty requirements
  - Provide a list of installers for information

Design - Incentive Structure

- Tie incentive levels to market performance/ project costs
  - Declining incentive levels
  - Capacity blocks to set timing of decline
  - Consider tiered incentive levels to capture effect of economy of scale for larger projects
- When possible, design incentives to support good system performance
  - Capacity-based incentives are easy to administer
  - Performance-based incentives tie compensation to actual production; are more costly to administer
  - Estimated performance-based incentives offer some of each; estimation can be tricky for some technologies
  - Flat rate incentives can be effective for jump-starting a market

Design - Quality Control

- Assure quality installations
  - Establish a rigorous technical review
  - Consider on-site verification or inspection
  - Tie incentive levels to equipment and installation practices that give highest capacity
- Establish close communication with local installation community
  - Work with trade groups to design program eligibility and review requirements to support a high-quality workforce

Multifaceted Incentive Program

GoSolarSF

San Francisco's PV incentive program is designed to accomplish many municipal goals.

Residential Incentives **Installers must participate in workforce development program**		
Base Incentives - Applicants choose one:		
Basic	Applies to all qualifying installations	$2,000
Environmental Justice	CARE customers, CALHome enrollees, residences in 94107 & 94124 zip codes	$3,000
Supplemental Incentives - Applicants choose one or both:		
Low-Income	For applicants below median income	$7,000
City Installer	Installer's principal business office located in San Francisco	$750
Business Incentive **Installers must participate in workforce development program**		
Business	$1,500 per kW of installed solar capacity	Up to $10,000
Non Profit Incentives **Installers must participate in workforce development program**		
Nonprofit	Property operated by a non-profit organization and owned by a nonprofit or government entity	$1,500/kW no cap.
Nonprofit-Residential	Multi-unit residential property owned & operated by a non-profit organization or by a for-profit affordable housing provider	$3,500/kW Up to $60,000

http://sfwater.org/mto_main.cfm/MC_ID/12/MSC_ID/139/MTO_ID/361

Grant Programs

- Advantages
  - Provide competitive opportunity for support for larger or less-"standard" projects
  - Can consider additional objectives beyond simple project installation
  - Allows selection of most "cost-effective" projects
  - Provides flexibility: awards can be based on needs of projects; number of applicants; availability of funding
  - Allows either very structured solicitations or more open requests
  - Provides opportunity for great publicity
- Currently 23 state programs; 3 local; utilities in 5 states

Grant Programs

- Challenges
  - Best designed when program objectives are very clearly defined
  - Requires applicants to submit comprehensive technical, economic, environmental, and financial details of proposed project
  - Fewer awardees
  - Potential for excessive awards
  - High administrative costs: best programs provide some level of ongoing assistance to ensure successful outcome
  - No guarantee of award (for project sponsor) or of project results

Grant Program Design

- Clearly define the goals of the solicitation – examples:
  - Social objectives
  - Project feasibility grants
  - New technologies
  - Locally produced equipment
  - Educational projects
- Be sure that process and decision criteria are transparent
  - Ensures an open, less politically sensitive proposal selection process
  - Scoring criteria: savings impact; cost-effectiveness; impact on marketplace; visibility of project; project team; potential for securing private financing; environmental benefits

Loan Programs

- Advantages
  - Can fill the gap in availability of private financing to help cover up front capital costs of project installation
  - May provide funding for a wide range of project types, as defined by customer demand
  - Can allow program funding to continue for many years as loans are repaid
- Challenges – depending on program specifics:
  - Principal risk
  - High administrative costs
  - Competition with, or reliance on, private lenders
  - Potential impact on tax credits
- 40 states; 9 local; utilities in 26 states

Loan Program Design

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- Common approaches
  - Direct loans
  - Interest rate buydown
  - Matching loans
  - Pay as You Save programs (PACE; on-bill financing)
- Key customer attributes of a good program
  - Low interest rates
  - Amortization over the life of the technology
  - Low transactions costs
  - Generally unsecured loans

Loan Programs – Design Considerations

- Many design considerations match those of other approaches
- Effective program marketing
  - Build program awareness among consumers as well as financial institutions
  - Be certain that program requirements and processes are easy to understand
- Efficient program delivery – quick review and approval
- Skilled staff
  - Need to be conversant in both renewable technologies and financial lending practices
- Ongoing loan monitoring and support – during construction as well as repayment

Resources Replay

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- DOE Technical Assistance Program
- Program Design Consultants
- DOE National Labs
- DSIRE (Database of State Incentives for Renewables & Efficiency): www.dsireusa.org
- IREC (Interstate Renewable Energy Council): www.irecusa.org
- Peer-to-peer opportunities (TAP meetings this fall and winter)
- Clean Energy States Alliance: www.cleanenergystates.org

Resources

- **Developing an Effective State Clean Energy Program: Clean Energy Loans**
- Clean Energy States Alliance. March 2009.
- The Clean Energy Group (CEG) runs the Clean Energy States Alliance (CESA), which is a nonprofit organization with members from states with clean energy funds and state agencies. CESA provides information and technical services to its members and works with them to build and expand clean energy markets in the United States. This paper summarizes innovative grant-making approaches and practices that have worked effectively for clean energy programs at the state level.
- **Developing an Effective State Clean Energy Program: Renewable Energy Incentives**
- Clean Energy States Alliance. March 2009.
- This paper summarizes innovative approaches and practices that have worked effectively for providing small renewable project incentives at the state level.
- **Solar Photovoltaic Financing: Residential Sector Deployment**
- National Renewable Energy Laboratory. March 2009.
- This report presents the information that homeowners and policy makers need to facilitate PV financing at the residential level. The full range of cash payments, bill savings, and tax incentives is covered, as well as potentially available solar attribute payments. Traditional financing is also compared with innovative solutions, many of which...
- **Solar Leasing for Residential Photovoltaic Systems**
- National Renewable Energy Laboratory. February 2009.
- This publication examines the solar lease option for residential PV systems and describes two solar lease programs already in place. As a result of the $2,000 cap on the residential ITC being lifted in 2009, the expansion of the solar lease model across the United States may be slower than anticipated. The lease model, though, still offers homeowners some distinct advantages. This publication helps homeowners revisit the comparison between the solar lease and home-equity financing in light of the change to the ITC.
- **Case Studies of State Support for Renewable Energy: Designing PV Incentive Programs to Promote Performance: A Review of Current Practice**
- Lawrence Berkeley National Laboratory. October 2006.
- This report examines PV incentive programs aimed at promoting PV system performance including (but not limited to) performance-based incentives (PBI) used in 32 states across the country.

- Links to all available at DOE's Solar America Cities site: http://www.solaramericacities.energy.gov/resources/guide_for_local_governments/2/1/

Upcoming Webinars

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Please join us again:

Title: **Driving Demand for Home Energy Improvements: Lessons from the Field**
Host: Merrian Fuller, National Renewable Energy Laboratory
Date: September 29, 2010
Time: 3:00 – 4:15 EDT

Title: **Sustainable Communities and Vehicle Miles Traveled (VMT) Reduction**
Host: Theresa Langer – American Council for an Energy-Efficient Economy
Date: October 5, 2010
Time: 2:00 – 3:00 EDT

Title: **Strategies for Making Existing Buildings High Performance**
Host: Carolyn Sarno – Northeast Energy Efficiency Partnerships
Date: October 7, 2010
Time: 2:00 – 3:00 EDT

Title: **Energy Savings Performance Contract (ESPC) Pricing and Financing**
Host: Meg Giuliano - ICF
Date: October 12, 2010
Time1:30 – 2:30 EDT

Title: **Future Funding: Effective Models for Leveraging Public Funds**
Host: Courtney Smith - ICF
Date: October 13, 2010
Time: 12:00 – 1:30 EDT

Title: **Energy Code Compliance and Enforcement Best Practices**
Host: Jim Meyers – Southwest Energy Efficiency Project
Date: October 14, 2010
Time: 2:00 – 3:00 EDT

Title: **Energy Management Systems Maximizing Energy Savings**
Host: Courtney Smith - ICF
Date: October 15, 2010
Time: 12:00 – 1:30 EDT

For the most up-to-date information and registration links, please visit the Solution Center webcast page at www.wip.energy.gov/solutioncenter/webcasts

Accessing TAP Resources

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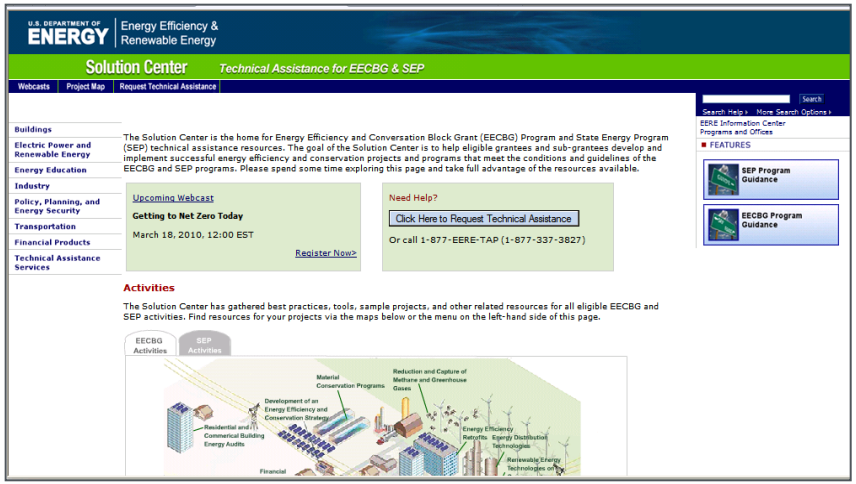
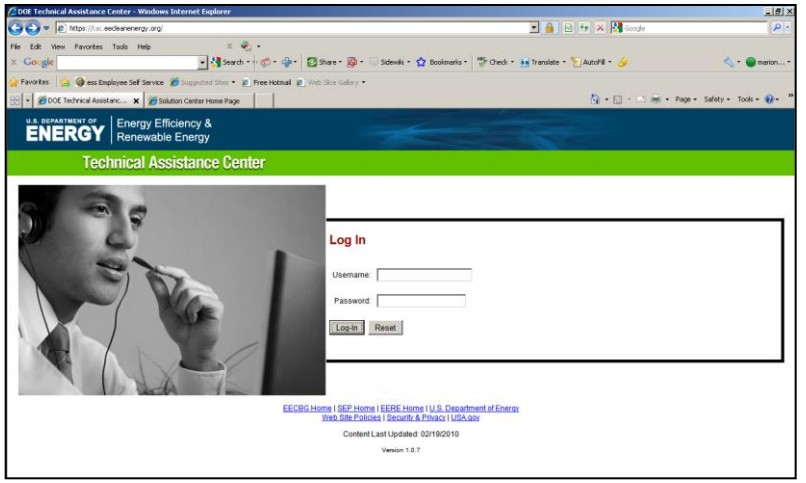
We encourage you to:

1) Explore our online resources via the Solution Center



2) Submit a request via the Technical Assistance Center



3) Ask questions via our call center at 1-877-337-3827 or email us at solutioncenter@ee.doe.gov

Questions & Comments

Cheryl Jenkins
Vermont Energy Investment Corporation
cjenkins@veic.org
Phone: 802-658-6060 ex. 1103

Questions?

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CONTACTS

VEIC: Dan Quinlan, dquinlan@veic.org, 802-488-7677 (**Team 4 Lead**)
MEEA: Wendy Jaehn, wjaehn@mwalliance.org, 312-784-7272
NEEP: Ed Londergan, elondergan@neep.org, 781-860-9177
NEEA: Dave Kresta, dkresta@nwalliance.org, 503-827-8416
SWEEP: Curtis Framel, cframel@swenergy.org, 303-447-0078
SEEA: Jolyn Newton, jolyn@seealliance.org, 615-612-9592
ACEEE: Eric Mackres, emackres@aceee.org, 202-507-4038
NRDC: Lara Ettenson, lettenson@nrdc.org, 415-875-6100
EFG: Richard Faesy, rfaesy@energyfuturesgroup.com, 802-482-5001